

the head markings. The typical *Z. synapturoides* is characterised by nine dark transverse unbranched bands on the trunk and seven or eight bands on the head (Plate, fig. 1). My specimens show twelve dark transverse bands on the body, distributed three on the head, and nine on the trunk. Moreover among the bands on the head, the second and the third show a bifurcation giving the appearance of four bands (Plate, fig. 2). Except for the body markings they agree well in all respects with the typical *Z. synapturoides*. Examination of a larger number of specimens is required to establish races or subspecies within the species *synapturoides*.

I am thankful to Dr. A. G. K. Menon for going through the manuscript and to Shri P. K. Eapen, Deputy Director, Offshore Fishing Station, Cochin for allowing me to collect the specimens from the "Flying Fish" trawl catch.

ZOOLOGICAL SURVEY OF INDIA,
CALCUTTA-16.

K. V. RAMA RAO

December 7, 1966.

10. A RE-DESCRIPTION OF THE ANCHOVY *ENGRAULIS* *RAMBHAE* CHAUDHURI

Chaudhuri (1916) recorded three new species of *Thryssa* Cuvier 1829 from the Chilka lake in Orissa. He described them as of the genus *Engraulis* Cuvier. The latter name as applied to the warm water Indo-West-Pacific anchovies is incorrect, *Engraulis* being an Atlantic-Pacific genus in the New World genera of Engraulidae. Apart from other distinguishing characters (Berry 1964, Whitehead 1962), *Engraulis* lacks abdominal scutes which occur in all warm water Indo-West-Pacific engraulids, except one species of *Stolephorus*, *St. celebica* Hardenberg. Whitehead (1965) has shown that the valid generic name is *Thryssa* Cuvier 1829, and that *Thrissocles* J. & E. is the junior objective synonym, for the warm water Indo-West-Pacific anchovies.

Chaudhuri's description of the three species is based mostly on external characters and body proportions; he paid little attention to meristic characters, and totally ignored the number of gill rakers and vertebrae.

In the course of a revision of the genus, I have observed that whereas the body *profiles* are rather distinctive in most species, there is considerable overlap in many body proportions (on which earlier workers laid so much stress) of the various species, and so are of limited value in systematics. In many fishes, body proportions tend to change with age; these changes should be taken into account in systematic studies. When giving body proportions, it is also advisable to state the length range of the specimens in which the measurements were made. In *Thryssa* spp. the

Rama Rao: *Zebrias synapturoides*

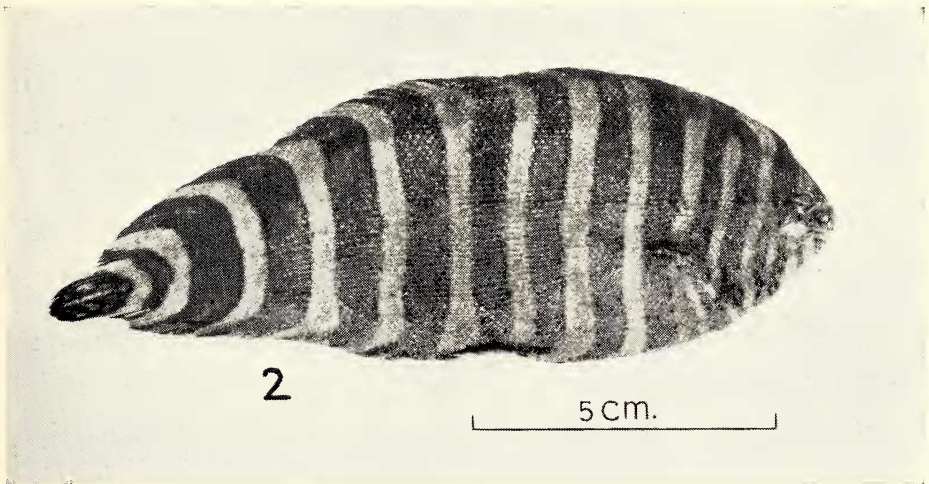
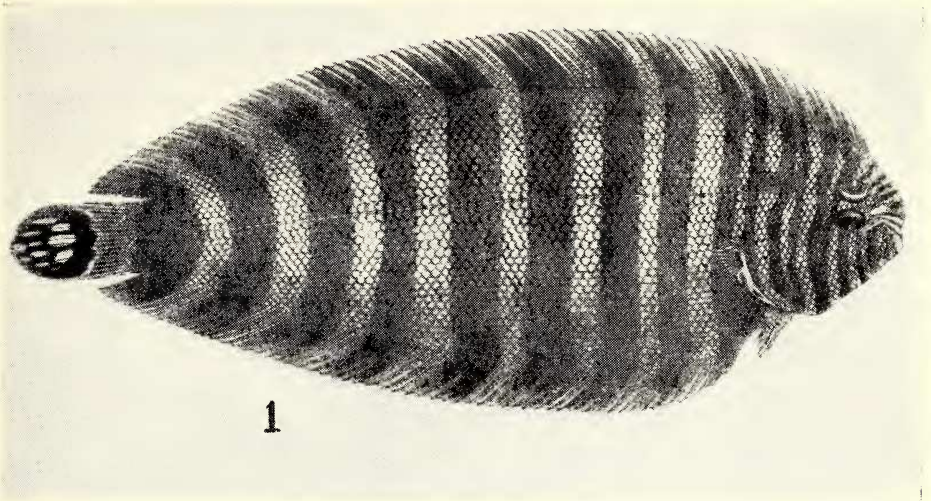


Fig. 1 *Zebrias synapturoides* (after Jenkins); Fig. 2. *Zebrias synapturoides* showing the band variation on the head.

limit of maxillary extension along with meristic data—particularly the number of anal fin rays, gill rakers (on the upper and lower arms of the first gill arch) and vertebrae considered together—can be effectively employed for the identification of even single specimens of any of the species.

Chaudhuri noted that in this species “the dorsal profile is highly convex and the ventral profile is almost straight”; this appears to be an artefact caused in some specimens, perhaps by preservation, for in my collection I observe that whereas in some specimens the profile is as described by Chaudhuri, in many others the back is not so arched and the ventral profile is also slightly convex.

The following re-description of *Thryssa rambhae* (Chaudhuri) is based on a re-examination of the holotype (F $\frac{8783}{1}$) in the Indian Museum, Calcutta and on a sample collected from Chilka lake on 27-9-1962.

Thryssa rambhae (Chaudhuri)

Engraulis rambhae Chaudhuri, 1916 Mem. Indian Mus., 5(4), 423-424, text fig. 5. (Rambha Bay in Chilka lake).

Description: Based on the holotype of *Engraulis rambhae*, a fish of 100 mm. total length *ex* Rambha Bay, Chilka lake (Ind. Mus. F $\frac{878}{1}$) and twenty-five specimens from the type locality, measuring 10.2-15.6 cm.

In percentages of total length and standard length¹, the latter in parentheses: body depth 23.1-24.4 (28.2-30.2), head length (snout to

¹ The body measurements are given as percentages of both total and standard length measured to end of urostyle, because practical experience shows that in a large number of fishes, it is difficult to specify a particular and exact point at the base of the caudal fin up to which the linear measurement should be made from the tip of the snout, for ‘standard length.’ To take an example, Chan (1965) states that in *Sardinella* spp. he took standard length as the “distance from the tip of snout (most advanced point on median line of upper jaw) to the end of the hypural plate (this point on the base of caudal fin has been taken at the mid-point of the vertical groove formed on the skin when the fin has been bent)” (p. 105). To anyone who has handled a sardine it is clear that the point where the vertical groove appears will depend on *where* and *how* one holds the caudal fin to bend it. There is bound to be an error of one or two millimetres between measurements made by two different workers, or between two measurements of the same worker, if there is lapse of time between the two measurements. The difficulty of determining the exact *point* on the caudal peduncle for measuring standard length may not mean a serious error in large-bodied fishes, but the error may be considerable in small-sized fishes or in juveniles, or might affect the comparison of closely related species or intraspecific groups. The MANUAL OF FIELD METHODS IN FISHERIES BIOLOGY, 1960 (F.A.O., General Editor G. L. Kesteven, p. 35) lists four different points up to which standard length can be measured. Many workers do not mention which of these they have taken. This makes comparison of data of different workers difficult. No doubt a ‘standard’ length is necessary in fish systematics, because in fishes, particularly those which have been subject to considerable handling or where the caudal fin rays are delicate or in old type specimens in museums, the caudal fin may not be entire, and it may not be possible to measure total length, for determining body proportions.